

	German Standard Fastening Clamps Clamps in Block Shape Part 1: Light Duty (L)	January 1999 DIN 3015-1
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ICS 21.060.70

Superceding Edition 1997-07

Description: Fastening clamp, block shape, clamp, light

And VG 95932: 1994-09

Fastening clamps - Block clamps- Part 1: Light duty (L)

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Introduction

This standard was revised by the Standards Committee of Ironware, Metal Sheets and Metal Goods (NA EBM) in DIN for working clamps.

Colors Of Different Clamping Jaws - Materials Mentioned In 4.3 Are Originally Determined For The Material identification. A variance of this determination is permitted if the manufacturer and purchaser Agree or if clamping jaws are marked with the imprinted or engraved material- abbreviation eg PA.

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DIN 3015 "Fastening Clamps - Clamps in Block Shape" Consists of:

Part 1: Light duty (L)

Part 2: Heavy duty (S)

Part 3: Double clamps (Z)

Part 10: Technical delivery conditions

Characteristics: lists for clamps according to DIN 4000-44

Modifications

Compared To The Edition From July 1997 And VG 95932:1994-09, The Following Modifications Have been undertaken:

- The drawings for shape G were adjusted. Dimensions were changed accordingly.
- The range standard VG 95932 was incorporated in this standard.
- The standard was editorially advised.

Former Editions

DIN 3015-1: 1992-02, 1997-07

VG 95932-1: 1984-02; VG 95932-2: 1984-01; VG 95932-3: 1984-01

VG 95932: 1994-09

VG 95942: 1984-04

VG 95945: 1983-08

VG 95946-1: 1984-04; VG 95946-2: 1984-04

VG 95960-1: 1984-06; VG 95960-2: 1984-06; VG 95960-3: 1984-06

VG 95962-1: 1984-12; VG 95962-2: 1984-12

1 Application Scope

This standard applies to fastening clamps with and without mounting rails for the fixation of various Conduits (eg hoses, pipes, cables) with a diameter range from 6 to 102 mm. For hoses and cables, Smooth permitted surface for the temperature range, see 4.3.

2 Normative Instructions

Through dated and undated references, this standard contains specifications from other publications. These normative references are quoted at the relevant points and the publications are set out below. For dated references, later adjustments or revisions from this publication only belong to this standard if they are incorporated through modification or revision. For undated references, the latest publication of the referred publication is applied.

- DIN 433-1 Washers; Product grade A - hardness to 250 HV, primarily for cheese head screws
- DIN 433-2 Washers; Product grade A - hardness to 300 HV, primarily for cheese head screws
- DIN 3015-10 Fastening clamps - block clamps; part 10, technical delivery conditions
- DIN 16773-1 Plastic moulding materials; polyamide(PA) homopolymers for moulding and extrusion; Classification and designation
- DIN 16774-1 Plastic Moulding Materials; Polypropylene And Propylene Copolymer Thermoplastics; Classification and designation
- DIN 50961 Electroplated Coatings; Zinc And Cadmium Coatings On Iron And Steel; Chromate Treatment of zinc and cadmium coatings

Standards of the series

- DIN EN 10088 Stainless steels
- DN EN 20898-1 Mechanical Characteristics Of Connecting Elements - Part 1: Screws (ISO 898-1:1988), German version EN 20898-1:1991
- DIN EN 24014 Hexagon head bolts; product grades A, B (ISO 4014:1988); German version ISO EN 24014: 1991
- DIN EN ISO 1207 Slotted Cheese Head Screws-product Grade A (ISO 1207:1992), German Version EN ISO 1207:1994
- DIN EN ISO 3506-1 Mechanical properties of corrosion-resistant stainless steel fasteners - Part 1: Screws (ISO 3506-1:1997); German version EN ISO 3506-1:1997
- DIN EN ISO 4762 Hexagon socket head cap screws (ISO 4762: 1997), German version EN ISO 4762:1997
- DIN ISO 4042 Threaded components; electroplated coatings; identical with ISO 4042:1989

3 Compilations

3.1 Shapes

3.1.1 Clamp shapes

Shape A with weld plate and cover plate and hexagon bolts

Shape B with weld plate and cylinder head screws with hexagon socket and washers

Shape C with weld and cylinder head screws with slot and washers *)

Shape D with mountain rail nuts, cover plate and hexagon bolts

Shape E with hexagon rail nuts, cylinder head screws with hexagon socket and washers

Shape F with hexagon rail nuts, cylinder head screws with slot and washers *)

Shape G with cover plate and hexagon bolts

Shape H with construction screws and rotation security

*) no supply articles from the German military forces

3.1.2 Inner surface shapes for d

G Inner surface smooth

R Inner surface with rips

E Inner surface with elastomeric insert

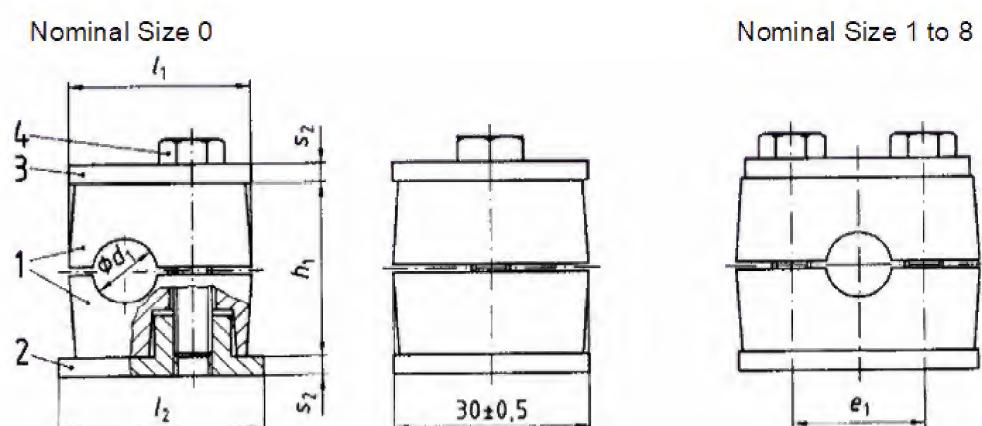
3.2 Measure

Dimensions in millimeter

Dimensions and other data of shapes B to H as shape A

Remark: Only the clamp shape G is displayed with an elastomer insert (inner surface shape E).

Shape A



Other dimensions and details as nominal size 0

Figure 1

Shape B

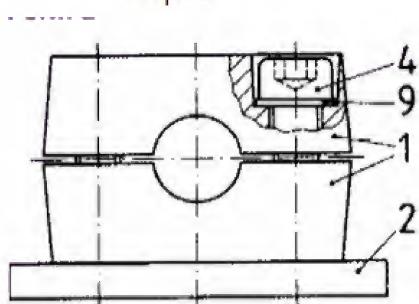


Figure 2

Shape C

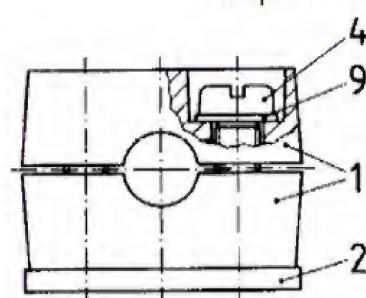
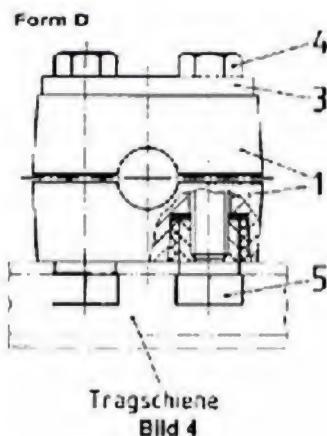


Figure 3

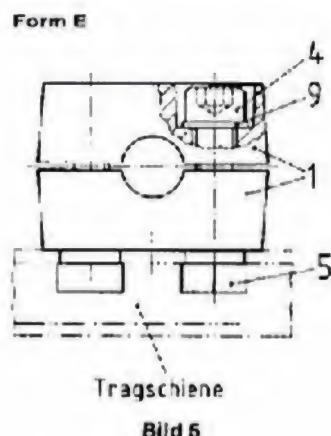
Shape D



Mounting Rail

Figure 4

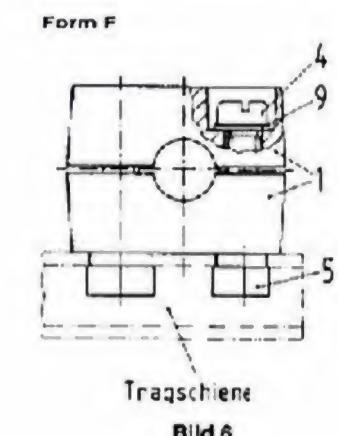
Shape E



Mounting Rail

Figure 5

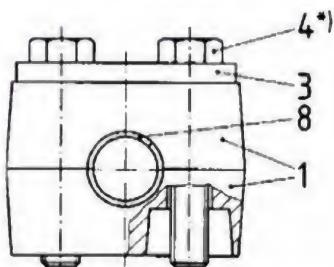
Shape F



Mounting Rail

Figure 6

Shape G



*) The screw length has to be combined with shape G

Figure 7

Shape H

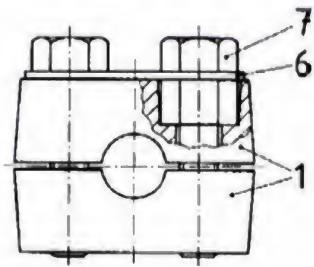


Figure 8

Table 1: Compilation, Dimensions

Nominal size	0	1	2	3	4	5	6	7	8
Inner surface Shape	GR	GR	GR	GR	GR	GR	GR	GR	GR
$d_1 \pm 0.3^{1)}$	6	12.7	19	26.9	12	32	44.5	20	57.2
	6.4	13.5	20	28	12.7	33.7	48.3	21.3	60.3
	8	14	21.3	30	13.5	35	50.8	20.5	63.5
	9.5	15	twenty two		14	38	20.5	20.5	70.5
	10	16	twenty three		15	40	25	73	
	12	17.2	25		16	42	25.4	76.1	
		18	25.4		17.2		26.9		
					18		28		
					19		30		
							32		
$e_1^{2)}$	-	20	26	33	40	52	66	94	120
$h_1^{2)3)}$		27	33	35	42	58	66	93	118
$l_1^{2)}$	28	37	42	50	59	71	86	121	147
$l_2^{2)}$	31.5	36	42	50	60	71	88	122	148
Version K									
Version L	58	64	70	78	87	100	115	150	178
$s_2^{2)}$									

3.3 Bill of Materials

Table 2: Bill of Materials

Item No.	Quantity of shape ¹⁾								Designation	Nominal size
	A	B	C	D	E	F	G	H		
1	1	1	1	1	1	1	1	1	Clamping halves pair	0 to 8
2	1	1	1	-	-	-	-	-	Weld plate	
3	1	-	-	1	-	-	1	-	Cover plate	
4	2	-	-	2	-	-	2 ²⁾	-	Hexagon bolt according to DIN EN 24014	M6×30
										M6×35
										M6×40
										M6×45
										M6×60
										M6×70
										M6×100 ³⁾
										7
										M6×125 ³⁾
										8
4	-	2	2	-	2	2	-	-	Cylinder head screw with hexagon socket according to DIN ISO 4762 or with slot according to DIN EN ISO 1207	M6×20
										M6×25
										M6×30
										M6×35
										M6×50
										M6×60
										M6×90 ⁴⁾
										7
										M6×110 ⁴⁾
										8
5	-	-	-	2	2	2	-	-	Hexagon rail nut	0 to 8
6	-	-	-	-	-	-	-	1	Rotating security	
7	-	-	-	-	-	-	-	2	Construction screw	
8	1	1	1	1	1	1	1	1	Elastomeric insert ⁵⁾	4 and 6
9	-	2	2	-	2	2	-	-	Washer 6.4 According to DIN 433-1 Or DIN 433-2 ⁶⁾	

- 1) For nominal size 0 from position number 4, 5, 7 and 9, only one piece;
- 2) The form length of shape G is agreed according to the type of fastening (eg screw in, nuts) Because of higher length;
- 3) Length of these screws is not commercial according to DIN EN 24014;
- 4) Lengths of these screws is not commercial according to DIN EN ISO 1207 and DIN EN ISO 4762;
- 5) Only for washers with inner surface shape E;
- 6) Washer thickness differs from DIN 433-1 and DIN 433-2 also can be 0.8mm.

NOTE: The rail according to 4.1.9 must be specially ordered.

3.4 Designation

Designation of the complete clamp in block shape is as follows in the diagram:

Schelle DIN 3015 – L A – K 6 E – 20 – PP – W1 – NBR – Zn

Designation -----

Numeric- Standard- Block-----

Light duty-----

Clamp Shape-----

Execution- Abbreviation-----

Nominal Size-----

Inner Surface Shape-----

Diameter d1-----

Material- Abbreviation of the clamp halves (to TAble 8) -----

Material- Abbreviation of the metal parts (according table 8) -----

Material- Abbreviation of the elastomeric insert (only for internal surface shape E, to table 8) -----

Abbreviation for galvanizing the weld plate (only if galvanization is needed) -----

4 Parts

4.1 Dimensions

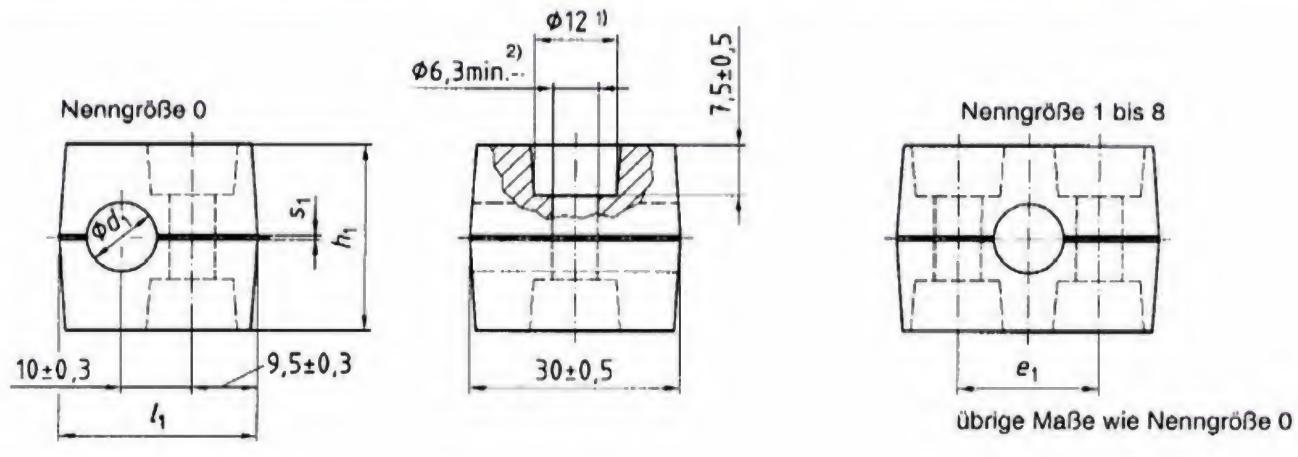
4.1.1 General

Dimensions in millimeters

Not mention details have have to be fully balanced.

4.1.2 Clamp halves pair (KP) (Item No.1)

Attention! For the construction, both clamp halves should be from the same manufacturer!



1) ${}^{+1}_{-0.2}$ PA/PP, ${}^{+1}_{-0.1}$ Al 2) For nominal sizes 7 and 8

Figure 9

Internal surface shapes

Clamp halves made of aluminum only with internal surface shape R

(Only for nominal sizes 4 and 6)

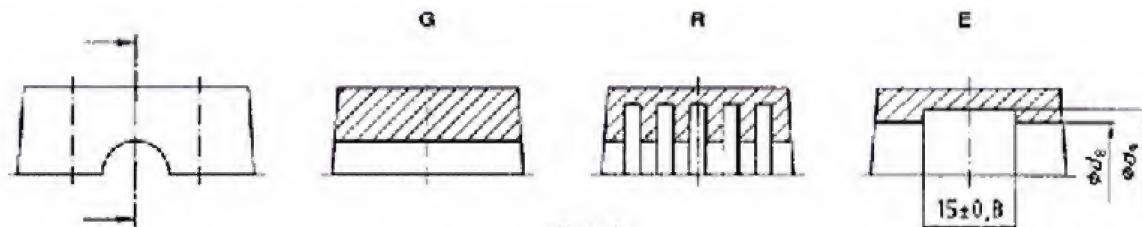


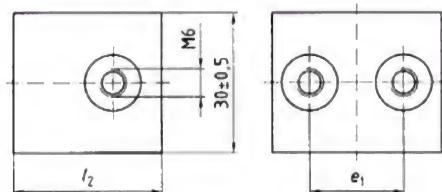
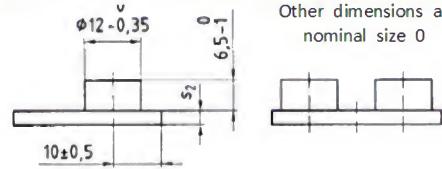
Figure 10

Table 3: Dimensions of the clamp halves

Nominal size	0	1	2	3	4	5	6	7	8
Number of ribs	PA, PP	4 or 5 ¹⁾			5				
	Al	-			3				-
Minimum Supporting surface	PA, PP	33%			40%				
Of the ribs	Al	-			40%				-
$d_1 \pm 0.3$					Table 1				
$d_8 \pm 1$	-	-	-	-	25.5	-	39	-	-
$d_9 \pm 1$	-	-	-	-	31	-	46	-	-
e_1	-	20	26	33	40	52	66	94	120
Tolerance	-	± 0.3			± 0.4			± 0.8	
h_1 ²⁾	27	33	35	42	58	66	93	118	
Tolerance		± 1.5			± 2			± 2.5	
l_1	28	37	42	50	59	71	86	121	147
Tolerance	± 1	$+1$ -3			$+2$ -3				

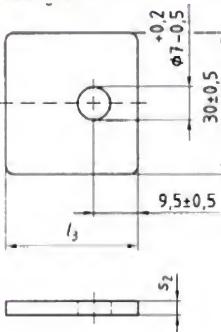
4.1.3 Weld plate (AP) (Item No. 2)

Nominal size 0 Short type (K) Nominal size 1 to 8
Other dimensions as nominal size 0



4.1.4 Cover plate (DP) (Item No. 3)

Nominal size 0



Nominal size 1 to 8

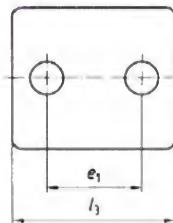


Figure 12

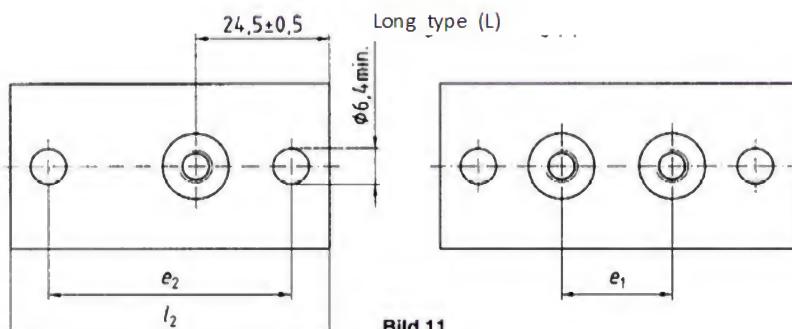


Bild 11

Figure 11

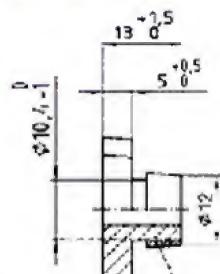
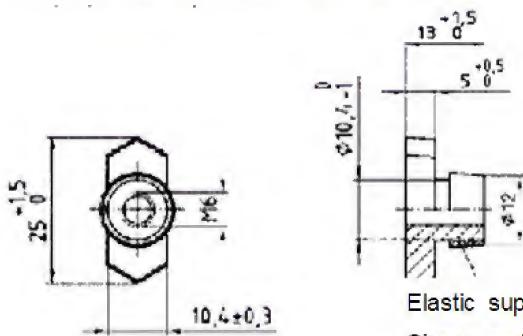
Other dimensions as type (K)

Other dimensions as nominal size 0

Table 4: Dimensions of the weld plates and cover plates

Nominal size	0	1	2	3	4	5	6	7	8
e_1	-	20	26	33	40	52	66	94	120
Tolerance				±0.2					±0.3
e_2	±0.3	44	50	56	64	73	86	100	136
l_2	Type K	31.5	36	42	50	60	71	88	122
l_3	Type L	58	64	70	78	87	100	115	150
l_4	±0.8	28	34	40.5	48	57	70	86	118
s_3	±0.2			3				5	

4.1.5 Hexagon rail nut^M (Item No. 5)



Elastic support- bracing.

Shape and material at choice
of the manufacturer

Figure 13

4.1.6 Rotating (VS) (Item No.6)

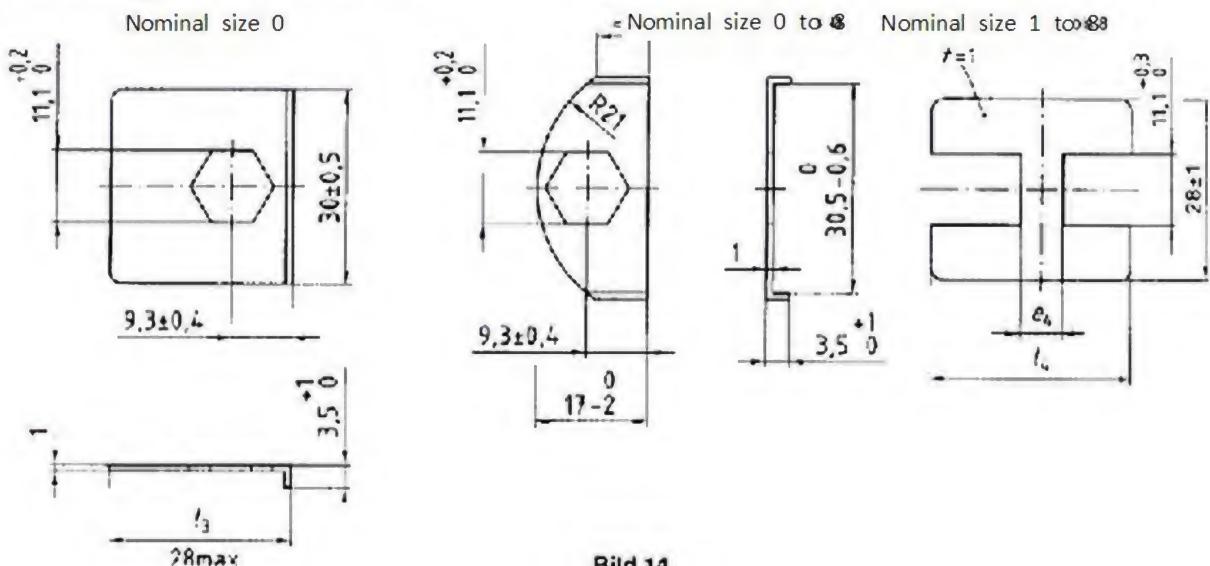


Figure 14

4.1.7 Structure screw (AS) (Item No. 7)

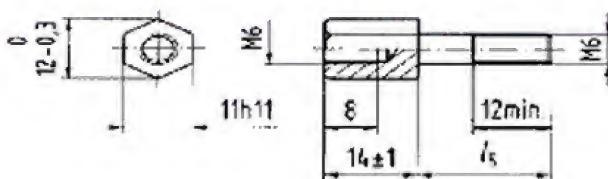


Figure 15

4.1.8 Elastomer insert (EL) (Item No. 8)

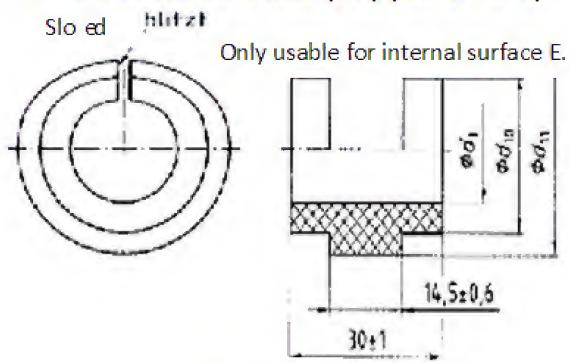
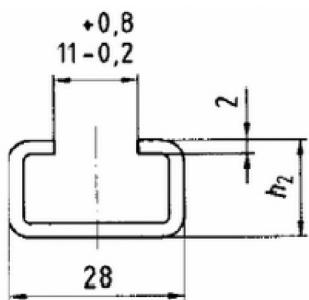


Figure 16

Table 5: Dimensions for rotating security, construction screw and elastomer insert

Nominal size	0	1	2	3	4	5	6	7	8
d_1					12		20		
					12.7		21.3		
					13.5		twenty two		
					14		twenty three		
					15		25		
					16		25.4		
					17.2		26.9		
					18		28		
					19		30		
							32		
d_{10}					25±1		38±1		
d_{11}					31.5±1		46.5±1.2		
e_4	-	6.5	12.5	19.5	26	38	52	81	107
Tolerance	-			±1			±1.5		±2
l_4	-	34	40	48	57	70	85	118	144
Tolerance		0	0	0	0		0		

4.1.9 Mounting rail (TS)



4.3 Materials

Table 8 Materials

Item No.	Material Abbreviation		
	W1	W4 ³⁾	W5
1	PP Copolymers polypropylene according to DIN 16774-1; Color: Green (other colors by agreement), Temperature range: -30C to 90C ¹⁾²⁾ PA Polyamide 6 according to DIN 16773-1; Color: Black (other colors by agreement), Temperature range: -40C to 120C ¹⁾²⁾ Al Aluminum alloys with a tensile strength of min. 180 N/mm ² , temperature range: -40°C to 300C (Al only for nominal sizes 1 to 6)		
2, 3, 6, 7	Steel with a tensile strength of min. 350 N/ mm ^{2,2)}	14301 or 14305 according to the range in DIN EN 10088	14401 or 14571 according to the range in DIN EN 10088
4	Cylinder head screw with slot: strength class 5.6 according to DIN EN 20898-1; other screws: strength class 8.8 according to DIN EN 20898-1	A2 – 70 according to DIN EN ISO 3506-1	A4-70 according to DIN EN ISO 3506-1
5	Steel or malleable iron with a tensile strength of min. 350/N/ mm ^{2,2)}	As Item No. 2, 3, 6 and 7	
8	TPE Thermoplastic elastomeric without halogen and a hardness of (70) shore A. Temperature range: -40C to 125C NBR NBR- Elastomeric hardness of (40) shore A. Temperature range: -30C to 90C EPDM EPDM- Elastomeric hardness of (55) shore A. Temperature range: -30C to 120C		
9	According to DIN 433-1 or DIN 433-2	As Item No. 2, 3, 6 and 7	
Mounting rail	Steel with a tensile strength of min. 350 N/ mm ^{2,2)}	As Item No. 2, 3, 6 and 7	
<ol style="list-style-type: none"> 1) The indicated temperature figures for PA and PP were determined on test specimens under long- term static loads. For dynamic loads of the supported part, the manufacturer has to be consulted regarding the temperature limits and dimensional stability. 2) Variety according to the manufacturer. 3) W4 not for supply articles of the German armed forces. 			

4.4 Execution

Metal parts must be free of burrs. Surfaces must meet the requirements table 9.

Table 9: Surfaces

Item No.	Surface of	
	W1	W4 and W5
2	Blank or phosphate according to the manufacturers choice (by request electro galvanized as the other parts ¹⁾)	Without coating
3, 5 and 6	Electro galvanized according to DIN 50961, minimum plate thickness 8µm. Coating system, process group and after treatment to manufacturer's choice.	
4, 7 and 9	A2P according DIN ISO 4042	

¹⁾ For supply articles of the German armed forces galvanized.

4.5 Determination

The clamp halves must be permanently marked with the nominal size, diameter d1 (not for clamp Halves for clamps with an inner surface shape E) and the name or mark of the manufacturer or Supplier.

With this standard, the agreement of the mounting clamp in this standard can be independently Expressed with the "DIN 3015" Labeling.

Instead of the color marks for the different types of clamping halves material mentioned in table 9, the Clamping halves may be marked with the engraved or imprinted material- abbreviations, eg PA.

5 Technical terms of delivery

According to DIN 3015-10